

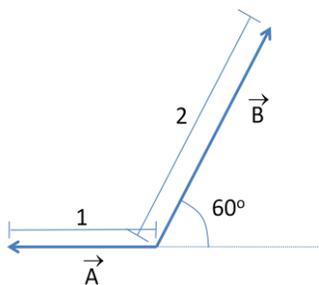
## Physics 6A, Introduction to Physics I, Fall 2008, UCSC

This questionnaire has two pages, front and back. The first page is required but will not affect your grade in any way. **This is NOT a test.** The second page is optional.

### Your Name:

In this course, some math knowledge is required (but there is no prerequisite for physics). The following questions are designed so that I get a better sense of your starting level of knowledge in some basic (or not so basic?) math that will be essential/helpful to know in this class.

1. Evaluate  $\frac{df}{dx}$  for  $f(x) = x^2$ .
2. Given  $f(x) = x$ , evaluate the in-definite integral  $\int^x f(t)dt$ .
3. Evaluate the definite integral  $\int_1^x (y - 1)dy$ .
4. [Advanced?] A vector, say  $\vec{A}$ , is pointing to the left and the other, say  $\vec{B}$ , is pointing right and up (60 degrees up). The length of  $\vec{A}$  is 1, and the length of  $\vec{B}$  is 2. What are the length and the direction of  $\vec{A} + \vec{B}$ ?



5. Evaluate  $\frac{df}{dx}$  and  $\frac{d^2f}{dx^2}$  for  $f(x) = \exp(ax)$ .
6. Evaluate  $\frac{df}{dx}$  and  $\frac{d^2f}{dx^2}$  for  $f(x) = \sin(3x)$ .
7. [Advanced] Explain this formula ("the most beautiful math formula"):  $1 + e^{i\pi} = 0$ . You can do it geometrically, or analytically (e.g., using Euler's formula), to explain why  $e^{i\pi}$  is -1.

This page is entirely optional, but if your answers are given, I will read them and use the information to help me teach (i.e. help you learn) in this class.

Nickname, short name, or preferred name (optional):

Email address (if different from email address (@ucsc.edu address) in the class roster):

*If you did not get my "Welcome, from your instructor~!" email, then please give your email address here.*

Major and level (optional):

What you expect in this course, or your motivation for taking this course (optional):

Any special goal or particular topic request in this course (optional):

Interest or current research area (optional):